

## GIARDIASIS

### REPORTING INFORMATION

- **Class B:** Report by the close of the next business day in which the case or suspected case presents and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report to the local public health department in which the reporting health care provider or laboratory is located.
- Reporting Form(s) and/or Mechanism:
  - The Ohio Disease Reporting System (ODRS) should be used to report lab findings to the Ohio Department of Health (ODH). For healthcare providers without access to ODRS, you may use the [Ohio Confidential Reportable Disease form](#) (HEA 3334).
  - The [Ohio Enteric Case Investigation Form](#) will be useful in the local health department follow-up of cases. Do not send this form to the Ohio Department of Health (ODH); information collected from the form should be entered into ODRS where all fields are available and the form should be uploaded in the Administration section of ODRS.
- Key Fields for ODRS reporting include: sensitive occupation or attendee of daycare, symptoms of and number ill in the household, travel and water exposure.

### CASE DEFINITION

#### Clinical Case Definition

An illness caused by the protozoan *Giardia lamblia* (also known as *G. intestinalis* or *G. duodenalis*) and characterized by gastrointestinal symptoms such as diarrhea, abdominal cramps, bloating, weight loss, or malabsorption.

#### Laboratory Criteria for Diagnosis

Laboratory-confirmed giardiasis shall be defined as the detection of *Giardia* organisms, antigen, or DNA in stool, intestinal fluid, tissue samples, biopsy specimens, or other biological sample.

#### Case Classification

Suspect\*: A clinically compatible case with presumptive or pending lab results and is not epidemiologically linked to a confirmed case.

Probable: A clinically compatible case that is epidemiologically linked to a confirmed case.

Confirmed: A case that meets the clinical description **AND** the criteria for laboratory confirmation as described above. When available, molecular characterization (e.g. assemblage designation) should be reported.

Not a Case: This status will not generally be used when reporting a case, but may be used to reclassify a report if investigation revealed that it was not a case.

\*This case classification can be used for initial reporting purposes to the Ohio Department of Health (ODH) as the Centers for Disease Control and Prevention (CDC) has not developed a classification.

### SIGNS AND SYMPTOMS

*Giardia* infection can cause a variety of intestinal symptoms, which may include diarrhea, gas or flatulence, greasy stool that can float, bloating, stomach or abdominal cramps, upset

stomach or nausea, lactose intolerance and dehydration. A “failure to thrive” is also a common symptom of *Giardia* in children. These symptoms may also lead to weight loss or inability to gain weight. Some people with *Giardia* infection have no symptoms at all. While a clinical illness is necessary to confirm *Giardia* infections, the illness can be any of these symptoms and does not have to include diarrhea.

## **DIAGNOSIS**

Because *Giardia* cysts can be excreted intermittently, multiple stool collections (i.e. three stool specimens collected every other day) increase testing sensitivity. It is estimated that >90% of infections are detected when 3 stools are examined. The 3 stools should be taken within a 10-day period and spaced 48 hours apart (e.g. Monday, Wednesday and Friday). The use of concentration methods and trichrome staining might not be sufficient to identify *Giardia* because variability in the concentration of organisms in the stool can make this infection difficult to diagnose. For this reason, fecal immunoassays that are more sensitive and specific should be used.

Rapid immune-chromatographic cartridge assays also are available but should not take the place of routine ova and parasite examination. Only molecular testing (e.g. polymerase chain reaction) can be used to identify the subtypes of *Giardia*.

In coordination with the Bureau of Infectious Diseases (614-995-5599), the Ohio Department of Health Laboratory performs testing for giardiasis in outbreak or work clearance situations.

## **EPIDEMIOLOGY**

### **Source**

Humans. Possibly wild and domestic animals.

### **Occurrence**

Giardiasis occurs worldwide. In Ohio, there is a seasonal peak in late summer. Although all ages are at risk, the two age groups with the most cases in Ohio are children <5 years of age and adults 30-39 years of age.

### **Mode of Transmission**

Most cases are probably due to person-to-person transmission by the fecal-oral route. Contaminated water or food may also account for some cases. Zoonotic transmission is not uncommon, as *Giardia* occurs in both wild and domestic animals including dogs, cats, cattle, and beavers. It is also transmitted through sexual practices that involve oral-anal contact and anal intercourse.

### **Period of Communicability**

During the acute illness and perhaps for weeks or months afterwards.

### **Incubation Period**

3-25 days or longer, with a median of 7-10 days.

## **PUBLIC HEALTH MANAGEMENT**

### **Case**

#### Investigation

All cases reported to the local health department should initially be followed up with a telephone call to obtain demographic and epidemiologic data. No further work-up is recommended if neither the case nor any household member is employed in a sensitive occupation (i.e. direct food handling, direct patient care, employees in child care centers

who handle food or directly care for children) or attends a child care center, unless there is evidence that the case is part of an outbreak.

### Treatment

Several drugs can be used to treat *Giardia* infection. Effective treatments include metronidazole, tinidazole, and nitazoxanide. Alternatives to these medications include paromomycin, quinacrine, and furazolidone. Some of these drugs may not be routinely available in the United States.

Different factors may shape how effective a drug regimen will be, including medical history, nutritional status, and condition of the immune system. Therefore, it is important to discuss treatment options with a healthcare provider. As a general rule, only symptomatic infections are treated; however, treatment should be strongly considered for a child care center attendee infected with *Giardia*.

### Isolation and Follow-up Specimens

Ohio Administrative Code 3701-3-13 (K) states:

"Giardiasis,: a person with giardiasis who attends a child care center or works in a sensitive occupation shall be excluded from the child care center or work in the sensitive occupation and may return after diarrhea has ceased and one of the following conditions have been met:

- (1) Seventy-two hours of effective antimicrobial therapy; or
- (2) Three consecutive follow-up stool specimens are negative for *Giardia*."

Obtain the first specimen at least 72 hours after cessation of diarrhea or, if being treated, at least 72 hours after completion of antimicrobial therapy. Obtain the remaining two specimens at least 48 hours apart, within a 10-day period. See

**Diagnosis**, above, for additional information.

The Centers for Disease Control and Prevention (CDC) recommends persons who have diarrhea not swim for two weeks after diarrhea ceases in order to prevent spread of disease.

### **Contacts**

If the case or any household member is employed in a sensitive occupation or is a child care center attendee, **all** household members with diarrhea should submit three specimens for *Giardia* testing and receive treatment if positive.

### **Prevention and Control**

Hand washing after using the toilet, changing diapers and before preparing food or eating can help prevent the spread of *Giardia*. Avoid drinking water from any outside body of water (e.g. lake, river, pond, stream or spring) unless it is filtered, chemically treated or boiled. Persons with *Giardia* should avoid swimming in pools as the cyst stage is chlorine-resistant.

### Food Handlers

Symptomatic persons should be excluded from work. As detailed in Isolation above, food handlers may only return to work after diarrhea has ceased, and 72 hours of effective antimicrobial therapy have been completed or three consecutive stools, properly collected, are negative.

Food Service Operation rules also pertain to this situation. Giardiasis is a disease which can be transmitted through food. A person infected with a disease that is communicable

by food is not permitted to work as a food handler. For additional information, refer to Ohio Administrative Code (OAC) Chapter 3717-1 (Ohio Uniform Food Safety Code) Section 02.1, Management and Personnel: Employee Health.

Healthcare Workers, Child Care Workers and Children who Attend Child Care Centers  
Symptomatic persons should be excluded from work or child care centers. As detailed in Isolation above, children who attend child care centers and persons who work in sensitive occupations may return when diarrhea has ceased and 72 hours of effective antimicrobial therapy have been completed or three consecutive stools, properly collected, are negative.

#### Child Care Center Outbreak Control

Whenever a case of giardiasis has been identified in a child care center attendee or worker who directly cares for children, all staff and children who are symptomatic and in the same classroom as the case should submit three specimens for *Giardia* testing and receive treatment if positive.

#### **Special Information**

Persons with diarrhea of infectious or unknown cause (e.g. confirmed or suspect cases of giardiasis) are not permitted to work in sensitive occupations, according to OAC 3701-3-13 (H) which states: "Diarrhea, infectious or of unknown cause: a person with diarrhea, of infectious or unknown cause, who attends a child care center or works in a sensitive occupation shall be excluded from the child care center or work in the sensitive occupation and may return only after diarrhea has ceased. A person with infectious diarrhea of known cause shall be isolated in accordance with the provisions of the rule set forth for the specified disease."

" 'Sensitive occupation' means direct food handling, direct patient care, the handling of food or provision of direct care to children in a child care center, or any other occupation which provides significant opportunity for an infected individual to transmit infectious disease agents" per OAC 3701-3-01 (Y).

#### Well Water Testing

It is not practical to test well water for *Giardia*. However, if the standard coliform test is positive, it indicates that human or animal waste is contaminating the well, which may also be the source of *Giardia* for a patient diagnosed with giardiasis.

**What is giardiasis?**

Giardiasis (GEE-are-DYE-uh-sis) is a diarrheal illness caused by a one-celled, microscopic parasite, *Giardia intestinalis* (also known as *Giardia lamblia*). Once an animal or person has been infected with *Giardia intestinalis*, the parasite lives in the intestine and is passed in the stool. Because the parasite is protected by an outer shell, it can survive outside the body and in the environment for long periods of time.

During the past 2 decades, *Giardia* infection has become recognized as one of the most common causes of waterborne disease (found in both drinking and recreational water) in humans in the United States. *Giardia* are found worldwide and within every region of the United States.

**What are the symptoms of giardiasis?**

Diarrhea, abdominal cramps, gas and nausea are the most common symptoms of giardiasis. These symptoms may lead to weight loss and dehydration. However, not everyone infected has symptoms.

**How long after being infected do symptoms appear?**

Symptoms usually appear 1-2 weeks (average 7 days) after infection with the parasite.

**How long do symptoms last?**

In otherwise healthy persons, symptoms can last 2-6 weeks. Occasionally, symptoms last longer.

**How can I get giardiasis?**

The *Giardia* parasite lives in the intestine of infected humans or animals. Millions of germs can be released in a bowel movement from an infected human or animal. *Giardia* is found in soil, food, water, or surfaces that have been contaminated with the feces from infected humans or animals. You **can** become infected after accidentally swallowing the parasite; you **cannot** become infected through contact with blood. *Giardia* can be spread by:

- Accidentally putting something into your mouth or swallowing something that has come into contact with feces of a person or animal infected with *Giardia*.
- Swallowing recreational water contaminated with *Giardia*. Recreational water includes water in swimming pools, hot tubs, jacuzzis, fountains, lakes, rivers, springs, ponds, or streams that can be contaminated with sewage or feces from humans or animals.
- Eating uncooked food contaminated with *Giardia*.
- Accidentally swallowing *Giardia* picked up from surfaces (such as bathroom fixtures, changing tables, diaper pails, or toys) contaminated with feces from an infected person.

**Who is at risk?**

Persons at increased risk for giardiasis include child care workers, diaper-aged children who attend child care centers, international travelers, swimmers, hikers, campers and others who drink untreated water from contaminated sources. Several community-wide outbreaks of giardiasis have been linked to drinking municipal water contaminated with *Giardia*.

**What should I do if I think I have giardiasis?**

See your healthcare provider, who will ask you to submit stool samples to see if you are harboring the parasite. Because *Giardia* can be difficult to diagnose, your health care provider may ask you to submit several stool specimens over several days.

### **What is the treatment for giardiasis?**

Several prescription drugs are available to treat *Giardia*. Although *Giardia* can infect all people, young children and pregnant women may be more susceptible to dehydration resulting from diarrhea and should, therefore, drink plenty of fluids while ill.

### **How can I prevent giardiasis?**

- Wash hands with soap and water after using the toilet and before handling food.
- Avoid water or food that may be contaminated.
- Wash and peel all raw vegetables and fruits before eating.
- Avoid drinking water from lakes, rivers, springs, ponds or streams unless it has been filtered or chemically treated.
- During community-wide outbreaks caused by contaminated drinking water, boil drinking water for one minute to kill the *Giardia* parasite and make the water safe to drink.
- When traveling in countries where the water supply may be unsafe, avoid drinking unboiled tap water and avoid uncooked foods washed with unboiled tap water. Bottled or canned carbonated beverages, seltzers, pasteurized fruit drinks and steaming hot coffee and tea are safe to drink. You should check the label on bottled water to make sure it has been properly filtered before drinking.
- If you work in a child care center where you change diapers, be sure to wash your hands thoroughly with plenty of soap and warm water after every diaper change, even if you wear gloves.
- Avoid swimming in pools if you or your child has *Giardia*. *Giardia* cysts are fairly chlorine resistant and are passed in the stools of infected people for several weeks after they no longer have symptoms.

### **My water comes from a well. Should I have my well water tested?**

Consider having your well water tested if you answer **yes** to the following questions:

- Are other members of your family or users of your well water ill? If yes, your well may be the source of infection.
- Is your well located at the bottom of a hill or is it considered shallow? If so, runoff from rain or flood water may be draining directly into your well causing contamination.
- Is your well in a rural area where animals graze? Well water can become fecally contaminated if animal waste seepage contaminates the ground water. This can occur if your well has cracked casings, is poorly constructed or is too shallow.

Tests specific for *Giardia* are expensive, difficult to run and usually require hundreds of gallons of water to be pumped through a filter. If you answered yes to the above questions, consider testing your well for fecal coliforms instead of *Giardia*. Although fecal coliform tests do not specifically test for *Giardia*, testing will show if your well has fecal contamination. If it does, the water is likely to be contaminated with *Giardia*, as well as other harmful bacteria and viruses. Look in your local telephone directory for a laboratory or cooperative extension that offers water testing.

### **My child was recently diagnosed as having giardiasis, but does not have diarrhea. My healthcare provider says treatment is not necessary. Is this true?**

In general, according to the American Academy of Pediatrics, treatment is not necessary. However, there are a few exceptions. If your child does not have diarrhea, but is having nausea, or is fatigued, losing weight or has a poor appetite, you and your healthcare provider may wish to consider treatment. If your child attends a day care center where an outbreak is continuing to occur despite efforts to control it, screening and treatment of children without obvious symptoms may be a good idea. The same is true if several family members are ill, or if a family member is pregnant and therefore not able to take the most effective anti-*Giardia* medications, or if a family member has certain immunocompromising conditions.